CCNP®: Cisco Internetwork Troubleshooting Study Guide

Arthur Pfund
Todd Lammle

SYBEX®

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Associate Publisher: Neil Edde
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Graphic Illustrator: Jeff Wilson, Happenstance Type-O-Rama
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The author and editors have worked hard to ensure that the Study Guide you hold in your hand is comprehensive, in-depth, and pedagogically sound. We're confident that this book will exceed the demanding standards of the certification marketplace and help you, the Cisco certification candidate, succeed in your endeavors.

As always, your feedback is important to us. Please send comments, questions, or suggestions to support@sybex.com. At Sybex we're continually striving to meet the needs of individuals preparing for IT certification exams.

Good luck in pursuit of your CCNP certification!

Neil Edde
Associate Publisher—Certification
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To my parents for helping me become the person I am today.

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Introduction

This book is intended to help you continue on your exciting new path toward obtaining your CCNP certification. Before reading this book, it is important to have at least read the Sybex *CCNA: Cisco Certified Network Associate Study Guide*, Fourth Edition. You can take the CCNP tests in any order, but you should have passed the CCNA exam before pursuing your CCNP. Many questions in the Cisco Internet Troubleshooting Support (CIT) exam are built on the CCNA material. However, we have done everything possible to make sure that you can pass the CIT exam by reading this book and practicing with Cisco routers.

Cisco Systems's Place in Networking

Cisco Systems has become an unrivaled worldwide leader in networking for the Internet. Its networking solutions can easily connect users who work from diverse devices on disparate networks. Cisco products make it simple for people to access and transfer information without regard to differences in time, place, or platform.

Cisco Systems's big picture is that it provides end-to-end networking solutions that customers can use to build an efficient, unified information infrastructure of their own or to connect to someone else's. This is an important piece in the Internet/networking-industry puzzle, because a common architecture that delivers consistent network services to all users is now a functional imperative. Because Cisco Systems offers such a broad range of networking and Internet services and capabilities, users needing regular access to their local network or the Internet can do so unhindered, making Cisco's wares indispensable.

Cisco answers this need with a wide range of hardware products that are used to form information networks using the Cisco Internetworking Operating System (IOS) software. This software provides network services, paving the way for networked technical support and professional services to maintain and optimize all network operations.

Along with the Cisco IOS, one of the services Cisco created to help support the vast amount of hardware it has engineered is the Cisco Certified Internetworking Expert (CCIE) program, which was designed specifically to equip people to effectively manage the vast quantity of installed Cisco networks. The business plan is simple: If you want to sell more Cisco equipment and have more Cisco networks installed, ensure that the networks you installed run properly.

However, having an extraordinary product line isn't all it takes to guarantee the huge success that Cisco enjoys—lots of companies with great products are now defunct. If you have complicated products designed to solve complicated problems, you need knowledgeable people who are fully capable of installing, managing, and troubleshooting those products. That part isn't easy, so Cisco began the CCIE program to equip people to support these complicated networks. This program, known colloquially as the Doctorate of Networking, has also been very successful, primarily due to its extreme difficulty. Cisco continually monitors the program, making the changes needed to make sure that the program remains pertinent and accurately reflects the demands of today's internetworking business environments.

Building on the highly successful CCIE program, Cisco Career Certifications permit you to become certified at various levels of technical proficiency, spanning the disciplines of network design and support. So, whether you're beginning a career, changing careers, securing your present position, or seeking to refine and promote your position, this is the book for you!

Cisco's Certifications

Cisco has created several certification tracks that will help you become a CCIE, as well as aid prospective employers in measuring skill levels. Before these new certifications existed, you took only one test and were then faced with the lab, which made it difficult to succeed. With the new certifications that add a better approach to preparing for that almighty lab, Cisco has opened doors that few were allowed through before. So, what are these new certifications, and how do they help you get your CCIE?

Cisco Certified Network Associate (CCNA)

The CCNA certification is the first certification in the new line of Cisco certifications and is a precursor to all current Cisco certifications. With the new certification programs, Cisco has created a type of stepping-stone approach to CCIE certification. Now, you can become a Cisco Certified Network Associate for the meager cost of the Sybex *CCNA: Cisco Certified Network Associate Study Guide*, Fourth Edition, plus $125 for the test.

And you don't have to stop there—you can choose to continue with your studies and select a specific track to follow. The Installation and Support track will help you prepare for the CCIE Routing and Switching certification; the Communications and Services track will help you prepare for the CCIE Communication and Services certification. It is important to note that you do not have to attempt any of these tracks to reach the CCIE, but choosing a track is recommended for the best success.

Cisco Certified Network Professional (CCNP)

The Cisco Certified Network Professional (CCNP) certification has opened many opportunities for the individual wishing to become Cisco-certified but who is lacking the training, the expertise, or the bucks to pass the notorious and often-failed two-day Cisco torture lab. The new Cisco certifications will truly provide exciting new opportunities for the CNE and MCSE who don't see an obvious way to advance.

So, you're thinking, "Great, what do I do after I pass the CCNA exam?" Well, if you want to become a CCIE in Routing and Switching (the most popular certification), understand that there's more than one path to the CCIE certification. One way is to continue studying and become a Cisco Certified Network Professional (CCNP). That means taking four more tests in addition to obtaining the CCNA certification.

We'll discuss requirements for the CCIE exams later on in this introduction.

Remember that you don't need to be a CCNP or even a CCNA to take the CCIE lab, but to accomplish that, it's extremely helpful if you already have these certifications.

The CCNP program will prepare you to understand and comprehensively tackle the internetworking issues of today and beyond—not limited to the Cisco world. You will undergo metamorphosis, vastly increasing your knowledge and skills through the process of obtaining these certifications.

What Are the CCNP Certification Skills?

Cisco demands a certain level of proficiency for its CCNP certification. In addition to what's required for the CCNA, you'll need to have the following skills:

- Installing, configuring, operating, and troubleshooting complex routed LAN, routed WAN, and switched LAN networks, and Dial Access Services.
- Understanding complex networking concepts, such as IP, IGRP, Async Routing, extended access lists, IP RIP, route redistribution, route summarization, OSPF, VLSM, BGP, Serial, IGRP, Frame Relay, ISDN, ISL, X.25, DDR, PSTN, PPP, VLANs, Ethernet, ATM LAN emulation, access lists, 802.10, FDDI, and transparent and translational bridging.

To meet the Cisco Certified Network Professional requirements, you must be able to perform the following:

- Install and/or configure a network to increase bandwidth, quicken network response times, and improve reliability and quality of service.
- Maximize performance through campus LANs, routed WANs, and remote access.
- Improve network security.
- Create a global intranet.
- Provide access security to campus switches and routers.
- Provide increased switching and routing bandwidth—end-to-end resiliency services.
- Provide custom queuing and routed priority services.

How Do You Become a CCNP?

After becoming a CCNA, the four exams you must take to get your CCNP are as follows:

Exam 642-801: Building Scalable Cisco Internetworks (BSCI) A while back, Cisco retired the Routing (640-603) exam and now uses this exam, 642-801, to build on the fundamentals of the CCNA exam. BSCI focuses on large multiprotocol internetworks and how to manage them. The BSCI exam is also a required exam for the CCIP and CCDP certifications, which will be discussed later in this introduction.

Exam 642-811: Building Cisco Multilayer Switched Networks (BCMSN) The Building Cisco Multilayer Switched Networks exam tests your knowledge of the 1900 and 5000 series of Catalyst switches. You'll also be challenged on your knowledge of switching technology, implementation and operation, planning and design.

Exam 642-821: Building Cisco Remote Access Networks (BCRAN) The Building Cisco Remote Access Networks (BCRAN) exam tests your knowledge of installing, configuring, monitoring, and troubleshooting Cisco ISDN and dial-up access products. You must understand PPP, ISDN, Frame Relay, and authentication.

Exam 642-831: Cisco Internetwork Troubleshooting Support (CIT) The Cisco Internetwork Troubleshooting Support (CIT) exam tests you on troubleshooting information. You must be able to document a network; troubleshoot Ethernet LANS and IP networks, as well as ISDN, PPP, and Frame Relay networks. This book covers all the topics you'll need to pass the CIT exam.

An Alternate Plan

If you hate tests, you can take fewer of them by signing up for the CCNA exam and the CIT exam, and then take just one more long exam called the Foundation R/S exam (640-841). Doing this also gives you your CCNP—but beware, it's a really long test that fuses all the material listed previously in this introduction into one exam. Good luck! That said, by taking this exam you get three tests for the price of two, which saves you $125 (if you pass). Some people think it's easier to take the Foundation R/S exam because you can leverage your higher-scoring areas against the areas in which you don't do as well. There is also an option to obtain your CCNP. This is to do three tests: the Composite Exam (642-891), which fuses the BSCI and BCMSN exams, plus the BCRAN and CIT exams.

Remember that test objectives and tests can change at any time without notice. Always check the Cisco website for the most up-to-date information (www.cisco.com).

Sybex has a solution for each one of the CCNP exams. Each study guide listed in the following table covers all the exam objectives for their respective exams.

Exam Name	Exam #	Sybex Products
Building Scalable Cisco Internetworks	642-801	*CCNP: Building Scalable Cisco Internetworks Study Guide* (ISBN 0-7821-4293-1)
Switching	642-811	*CCNP: Building Cisco Multilayer Switched Networks Study Guide* (0-7821-4294-X)
Remote Access	642-821	*CCNP: Building Cisco Remote Access Networks Study Guide* (0-7821-4296-6)
Support	642-831	*CCNP: Cisco Internetwork Troubleshooting Study Guide*. (0-7821-4295-8)

Also available: *CCNP Study Guide Kit, 3rd Ed*. (0-7821-4297-4); covers all four exams.

Cisco Certified Internetwork Professional (CCIP)

After passing the CCNA, the next step in the Communications and Services track is the CCIP. The CCIP is a professional-level certification.

The CCIP certification gives you the skills necessary to understand and tackle the complex internetworking world of the service provider. You will acquire the knowledge necessary to prepare you for moving forward toward the coveted CCIE Communications and Services certification.

What Are the CCIP Certification Skills?

Cisco demands a certain level of proficiency for its CCIP certification. In addition to what's required for the CCNA, you will need to have the following skills:

- Performing complex planning, operations, installations, implementations, and troubleshooting of internetworks.
- Understanding and managing complex communications networks—last mile, edge, or core.

How Do You Become a CCIP?

After becoming a CCNA, you must take two core exams and an elective. The core exams are:

Exam 642-801: Building Scalable Cisco Internetworks (BSCI) A while back, Cisco retired the Routing (640-603) exam and now uses this exam, 642-801, to build on the fundamentals of the CCNA exam. BSCI focuses on large multiprotocol internetworks and how to manage them.

Exam 642-641: Quality of Services (QoS) This exam tests your knowledge of Quality of Service for internetworks.

Exam 640-910: Implementing Cisco MPLS (MPLS) This exam tests your knowledge of multiprotocol label switching and its implementation. The Sybex *CCIP: MPLS Study Guide* (ISBN 0-7821-4096-3) covers all the exam objectives.

Exam 642-661: Border Gateway Protocol (BGP) This exam tests your knowledge of Border Gateway Protocol (BGP). When you complete this exam you should be able to manage a large BGP network.

Cisco's Network Design and Installation Certifications

In addition to the Network Installation and Support track and the Communications and Services track, Cisco has created another certification track for network designers. The two certifications within this track are the Cisco Certified Design Associate (CCDA) and Cisco Certified Design Professional (CCDP). If you're reaching for the CCIE stars, we highly recommend the CCNP and CCDP certifications before attempting the CCIE R/S Qualification exam.

These two certifications will give you the knowledge to design routed LAN, routed WAN, and switched LAN.

Cisco Certified Design Associate (CCDA)

To become a CCDA, you must pass the DESGN (Designing for Cisco Internetwork Solutions) test (640-861). To pass this test, you must understand how to do the following:

- Design simple routed LAN, routed WAN, and switched LAN and ATM LANE networks.
- Use network-layer addressing.
- Filter with access lists.
- Use and propagate VLAN.
- Size networks.

Cisco Certified Design Professional (CCDP)

If you're already a CCNP and want to get your CCDP, you can simply take the ARCH 642-871 test. If you're not yet a CCNP, however, you must take the CCDA, CCNA, BSCI, Switching, Remote Access, and CID exams.

CCDP certification skills include:

- Designing complex routed LAN, routed WAN, and switched LAN and ATM LANE networks.
- Technical knowledge beyond the base level of CCDA.

CCDPs must also demonstrate proficiency in the following:

- Network-layer addressing in a hierarchical environment.
- Traffic management with access lists.
- Hierarchical network design.
- VLAN use and propagation.
- Performance considerations: required hardware and software; switching engines; memory, cost, and minimization.

Cisco's Security Certifications

Quite a few Cisco security certifications are available. All of the Cisco security certifications also require a valid CCNA.

Cisco Certified Security Professional (CCSP)

You have to pass five exams to get your CCSP. The pivotal exam is the SECUR. Here are the exams you must pass to call the CCSP yours:

Exam 642-501: Securing Cisco IOS Networks (SECUR) This exam tests your understanding of such concepts as basic router security, AAA security for Cisco routers and networks, Cisco IOS Firewall configuration and authentication, building basic and advanced IPSec VPNs, and managing Cisco enterprise VPN routers. Sybex can help you pass the SECUR exam with the *CCSP: Securing Cisco IOS Networks Study Guide* (ISBN 0-7821-4231-1).

Exam 642-521: Cisco Secure PIX Firewall Advanced (CSPFA) This exam challenges your knowledge of the fundamentals of Cisco PIX Firewalls, as well as translations and connections, object grouping, advanced protocol handling and authentication, authorization, and accounting, among other topics. You can tackle the CSPFA exam with the help of Sybex's *CCSP: Secure PIX and Secure VPN Study Guide* (ISBN 0-7821-4287-7).

Exam 642-511: Cisco Secure Virtual Private Networks (CSVPN) The CSVPN exam covers the basics of Cisco VPNs; configuring various Cisco VPNs for remote access, hardware client, backup server, and load balancing; plus IPSec over UDP and IPSec over TCP. Again, using the Sybex *CCSP: Secure PIX and Secure VPN Study Guide* (ISBN 0-7821-4287-7), you'll approach the CSVPN exam with confidence.

Exam 642-531: Cisco Secure Intrusion Detection System (CSIDS) The CSIDS exam will challenge your knowledge of intrusion detection technologies and solutions, and test your abilities to install and configure ISD components. You'll also be tested on managing large-scale

deployments of Cisco IDS sensors using Cisco IDS management software. Prepare for the CSIDS exam using Sybex's *CCSP: Secure Intrusion Detection and SAFE Implementation Study Guide* (ISBN 0-7821-4288-5).

Exam 9E0-131: Cisco SAFE Implementation (CSI) This exam tests such topics as security and architecture fundamentals, SAFE Network design for small and medium corporate and campus situations, and SAFE remote-user network implementation. You can take advantage of Sybex's *CCSP: Secure PIX and Secure VPN Study Guide* (ISBN 0-7821-4287-7) for help with this exam.

Cisco Firewall Specialist

Cisco Security certifications focus on the growing need for knowledgeable network professionals who can implement complete security solutions. Cisco Firewall Specialists focus on securing network access using Cisco IOS Software and Cisco PIX Firewall technologies.

The two exams you must pass to achieve the Cisco Firewall Specialist certification are Securing Cisco IOS Networks (SECUR) and Cisco Secure PIX Firewall Advanced (CSPFA).

Cisco IDS Specialist

Cisco IDS Specialists can both operate and monitor Cisco IOS Software and IDS technologies to detect and respond to intrusion activities.

The two exams you must pass to achieve the Cisco IDS Specialist certification are Securing Cisco IOS Networks (SECUR) and Cisco Secure Intrusion Detection System (CSIDS).

Cisco VPN Specialist

Cisco VPN Specialists can configure VPNs across shared public networks using Cisco IOS Software and Cisco VPN 3000 Series Concentrator technologies.

The exams you must pass to achieve the Cisco VPN Specialist certification are Securing Cisco IOS Networks (SECUR) and Cisco Secure Virtual Networks (CSVPN).

Cisco Certified Internetwork Expert (CCIE)

Cool! You've become a CCNP, and now your sights are fixed on getting your Cisco Certified Internetwork Expert (CCIE) certification. What do you do next? Cisco recommends a *minimum* of two years on-the-job experience before taking the CCIE lab. After jumping those hurdles, you then have to pass the written CCIE Exam Qualifications before taking the actual lab.

There are four CCIE certifications, and you must pass a written section and a lob portion for each certification. As can be seen from below, most of the CCIE certifications require only a single test, but one requires multiple:

CCIE Communications and Services (Exams 350-020, 350-021, 350-022, 350-023) The four CCIE Communications and Services written exams cover IP and IP routing, optical, DSL, dial, cable, wireless, WAN switching, content networking, and voice.

CCIE Routing and Switching (Exam 350-001) The CCIE Routing and Switching exam covers IP and IP routing, non-IP desktop protocols such as IPX, and bridge- and switch-related technologies.

Sybex can help you pass the CCIE Routing and Switching exam with the *CCIE: Cisco Certified Internetworking Expert Study Guide,* Second Edition (ISBN 0-7821-4207-9).

CCIE Security (Exam 350-018) The CCIE Security exam covers IP and IP routing as well as specific security components.

CCIE Voice (Exam 351-030) The CCIE Voice exam covers those technologies and applications that make up a Cisco Enterprise VoIP solution.

Where Do You Take the Exam?

You can take the exams at any of the Sylvan Prometric or Virtual University Enterprises (VUE) testing centers around the world. For the location of a testing center near you, call Sylvan at (800) 755-3926 or VUE at (877) 404-3926. Outside of the United States and Canada, contact your local Sylvan Prometric Registration Center.

To register for a Cisco Certified Network Professional exam:

1. Determine the number of the exam you want to take. (The CIT exam number is 642-831.)
2. Register with the nearest Sylvan Prometric or VUE testing center. At this point, you will be asked to pay in advance for the exam. At the time of this writing, the exams are $125 each and must be taken within one year of payment. You can schedule exams up to six weeks in advance or as soon as one working day prior to the day you wish to take it. If something comes up and you need to cancel or reschedule your exam appointment, contact the testing center at least 24 hours in advance. Same-day registration isn't available for the Cisco tests.
3. When you schedule the exam, you'll get instructions regarding all appointment and cancellation procedures, the ID requirements, and information about the testing-center location.

Tips for Taking Your CCNP CIT Exam

The CCNP CIT test contains about 65 questions to be completed in about 90 minutes. However, understand that your test may vary somewhat from this estimate.

Many questions on the exam have answer choices that at first glance look identical—especially the syntax questions! Remember to read through the choices carefully, because "close" doesn't cut it. If you put commands in the wrong order or forget one measly character, your answer will be wrong. So, to practice, do the hands-on exercises at the end of the chapters over and over again until the solutions feel natural to you.

Unlike Microsoft or Novell tests, the exam has answer choices that are highly similar in syntax—although some syntax is dead wrong, it is usually just *subtly* wrong. Some other syntax choices may be right, but they're shown in the wrong order. Cisco does split hairs, and it is not at all averse to giving you classic trick questions. Here's an example:

`access-list 101 deny ip any eq 23` denies Telnet access to all systems.

This statement looks correct to most people because they refer to the port number (23) and think, "Yes, that's the port used for Telnet." The catch is that you can't filter IP on port numbers (only TCP and UDP can be filtered in this way). Another indicator that this command is wrong is the use of an extended access list number but with any or no destination address for the destination.

Cisco does have some simulation questions on the CIT exam. Make sure you've got hands-on skills to take this test. Practice with the hands-on labs in this book, and for further practice with routers and switches, check out the CCNP Virtual Lab from Sybex.

Also, never forget that the right answer is the Cisco answer. In many cases, more than one appropriate answer is presented, but the *correct* answer is the one that Cisco recommends.

Here are some general tips for exam success:

- Arrive early at the exam center, so you can relax and review your study materials.
- Read the questions *carefully*. Don't just jump to conclusions. Make sure that you're clear about *exactly* what each question asks.
- Don't leave any questions unanswered. They count against your score.
- When answering multiple-choice questions that you're not sure about, use the process of elimination to get rid of the obviously incorrect answers first. Doing this greatly improves your odds if you need to make an educated guess.
- As of this writing, the written exams still allow you to skip ahead and then return to previous questions. However, it is always best to check the Cisco website before taking any exam, to get the most up-to-date information.

After you complete an exam, you'll get immediate, online notification of your pass or fail status, a printed Examination Score Report that indicates your pass or fail status, and your exam results by section. (The test administrator will give you the printed score report.) Test scores are automatically forwarded to Cisco within five working days after you take the test, so you don't need to send your score to them.

What Does This Book Cover?

This book covers everything you need to pass the CCNP CIT exam. It teaches you how to document your network, and how to troubleshoot and maintain Cisco routers and switches in a large internetwork. Each chapter begins with a list of the topics covered, related to the CCNP CIT test, so make sure to read the list before working through the chapter.

- Chapter 1 discusses the complexity of today's internetworks and introduces you to the Cisco Troubleshooting Methodology. You'll study how to apply this methodology to network problems.

- Chapter 2 focuses on what goes into a network baseline, as well as how to create one. It also details two of the baseline's components: the network configuration table and the network topology diagram.
- Chapter 3 continues the discussion on documentation by explaining the end-system version of a network configuration table and network topology diagram. This chapter also takes you through the steps required to create these documents. In the second half of the chapter, various troubleshooting approaches are discussed and some end-system troubleshooting commands are reviewed.
- Chapter 4 reviews the OSI reference model and then discusses connection-oriented and connectionless protocols. Following this, the IP, ICMP, TCP, and UDP protocols are examined, and Layer 2 protocols are covered.
- Chapter 5 focuses on the skills and knowledge needed to use Cisco's built-in diagnostic tools in a TCP/IP environment. These tools include `show`, `debug`, and `logging` commands as well as a router core dump. This chapter also examines appropriate use of the ping and traceroute utilities. LAN and WAN problems are explored, and the chapter ends with a discussion of access lists.
- Chapter 6 is dedicated to covering IP routing protocols, specifically RIP, IGRP, EIGRP, OSPF, and BGP. The benefits and drawbacks of each are included, as well as the commands used to verify correct functionality. We also discuss the issues of redistributing these protocols.
- Chapter 7 examines serial and Frame Relay connectivity. You'll study the function of the `show` and `debug` IOS commands needed to successfully troubleshoot problems in serial and Frame Relay environments, as well as some common problem areas.
- Chapter 8 discusses ISDN and related protocols, specifically looking at what is necessary to set up an ISDN dial solution. In addition, time is spent looking at the `debug` output from the call setup, to show how an ISDN call is established.
- Chapter 9 details the functioning of Catalyst series switches. This chapter includes information on the architecture of the switch as well as the command syntax used to configure the switch. It also discusses the use of VLANs and trunking switch ports together.
- Chapter 10 is a summary chapter that takes the information from the previous chapters and applies it to real-world examples. These examples demonstrate combining the troubleshooting methodology with the technical skills learned in this book.
- The Glossary is a handy resource for Cisco vocabulary and is an excellent tool for understanding some of the more obscure terms used in this book.

Each chapter ends with review questions that are specifically designed to help you retain the knowledge presented. To really nail down your skills, read each question carefully.

How to Use This Book

This book can provide a solid foundation for the serious effort of preparing for the CCNP CIT exam. To best benefit from this book, use the following study method:

1. Take the Assessment Test immediately following this Introduction. (The answers are at the end of the test.) Carefully read over the explanations for any question you get wrong, and note which chapters the material comes from. This information will help you plan your study strategy.

2. Study each chapter carefully, making sure that you fully understand the information and the test topics listed at the beginning of each chapter. Pay extra-close attention to any chapter where you missed questions in the Assessment Test.
3. Note the questions that confuse you, and study those sections of the book again.
4. Before taking the exam, try your hand at the two bonus exams included on the CD that comes with this book. The questions in these exams appear only on the CD. This will give you a complete overview of what you can expect to see on the real thing.
5. Remember to use the products on the CD included with this book. The electronic flashcards and the EdgeTest exam-preparation software have all been specifically picked to help you study for and pass your exam. Study on the road with the *CCNP: Cisco Internetwork Troubleshooting Study Guide* eBook in PDF format, and test yourself with the electronic flashcards.

The electronic flashcards can be used on your Windows computer, Pocket PC, or Palm device.

6. Make sure you review the Key Terms list at the end of each chapter. Appendix A includes all the commands used in the book, along with an explanation for each command.

To learn all the material covered in this book, you'll have to apply yourself regularly and with discipline. Try to set aside the same time every day to study, and select a comfortable and quiet place to do so. If you work hard, you'll be surprised at how quickly you learn this material. All the best!

What's On the CD?

We worked hard to provide some really valuable tools to help you with your certification process. All of these tools should be loaded on your workstation when studying for the test.

The Sybex Test Engine for Cisco CIT Test Preparation

New from Sybex, this test-preparation software prepares you to successfully pass the CIT exam. In the test engine, you'll find all the questions from the book, plus the two additional Bonus Exams that appear exclusively on the CD. You can take the Assessment Test, test yourself by chapter, or take the two Bonus Exams that appear on the CD.

Electronic Flashcards for PC, Pocket PC, and Palm Devices

After you read the *CCNP: Cisco Internetwork Troubleshooting Study Guide*, you'll of course read the review questions at the end of each chapter and study the practice exams included in the book and on the CD. But wait, there's more! Test yourself with the flashcards included on the CD. If you can get through these difficult questions and understand the answers, you'll know you'll be ready for the CCNP CIT exam.

The flashcards include 150 questions specifically written to hit you hard and make sure you are ready for the exam. Between the review questions, practice exam, and flashcards, you'll be more than prepared for the exam.

CCNP: Cisco Internetwork Troubleshooting Study Guide in PDF

Sybex offers this Cisco Certification book on the accompanying CD so that you can read the book on your PC or laptop. The eBook is in Adobe Acrobat format, and Acrobat Reader is included on the CD as well. This is extremely helpful to readers who travel and don't want to carry a book, as well as to readers who find it more comfortable reading from their computer.

How to Contact the Authors

You can reach Art Pfund by e-mailing him at `art.pfund@comcast.net`.

Assessment Test

1. Which are reasons for using a troubleshooting method? (Choose all that apply.)
   - **A.** Problem isolation and resolution will occur more quickly.
   - **B.** No documentation needs to be done when following a method.
   - **C.** Due to complex topologies and technologies, a systematic method is the most efficient way to resolve network problems.
   - **D.** All of the above.
2. What are the benefits of gathering additional facts for troubleshooting? (Choose all that apply.)
   - **A.** Possible causes of problems may be identified.
   - **B.** A specific problem definition may be created.
   - **C.** Information is provided for a baseline.
   - **D.** All of the above.
3. Which of the following are key components of creating an action plan? (Choose all that apply.)
   - **A.** Multiple changes as long as they are documented
   - **B.** Changes that do not compromise security
   - **C.** Changes that have only brief network impact
   - **D.** Back-out plans
4. How many methods of problem isolation exist?
   - **A.** 2
   - **B.** 3
   - **C.** 4
   - **D.** 6
5. Which of the following steps are part of the Cisco troubleshooting methodology? (Choose all that apply.)
   - **A.** Observation of results
   - **B.** Observation of changes
   - **C.** Iteration
   - **D.** Documentation
   - **E.** Problem definition
   - **F.** Problem resolution
   - **G.** Troubleshooting